Approved for Release: 2016/10/24 C05416077

~~SECRET~~

File: Hot-Air Balloon 133 E Prison

16 January 1963

Note: Rpt seen by AC/TSD/R&D

(b)(3)

MEMORANDUM FOR THE RECORD

SUBJECT: Report of Trip to Albuquerque, New Mexico

1. During the period of January 4 through January 10 the undersigned was in Albuquerque, New Mexico for the purpose of working with the contractor on the two man hot-air balloon transportation system. The contractor on this program is Raven Industries of Sioux Falls, South Dakota. During this time period the following additional personnel were in attendance either during part of, or for the entire working period:

[redacted] TSD/CAB
[redacted] C/TSD/EB
P. E. Yost, Project Engineer, Raven
Frank A. Heidelbauer, Raven
Russel Pohl, Raven
J. R. Smith, Vice-President, Raven
Geno Marcuso, Raven
Sgt. Jesse Spradley, Kirtland AFB

2. The contractor had two balloon systems prepared for test. These consisted of two 50 foot diameter balloons; one made of nylon with a mylar laminate and the other fabricated from an acrylic impregnated nylon; two gondolas, one with two twenty-two gallon fuel tanks and the other with two thirty gallon fuel tanks; and burners and associated components. Any of these components are interchangeable in the systems. The different size fuel tanks merely give extended burning time to the flight system. The equipment weights were as follows:

Balloon	110 pounds
Burner	13 pounds
Gondola	40 pounds
22 gallon fuel tanks	37 pounds each
30 gallon fuel tanks	50 pounds each
Blower	7 pounds
Instrument Box	$4\frac{1}{2}$ pounds
Fuel	$4\frac{1}{4}$ pounds/gallon

The average fuel consumption is ten gallons per hour.

3. The periods of time in this report were spent as follows:

4 January - Travel to New Mexico

5 January - The first part of this day was utilized in laying out all of the various components and a discussion of these components.

~~SECRET~~

GROUP 1
Excluded from automatic downgrading and declassification

Approved for Release: 2016/10/24 C05416077

Approved for Release: 2016/10/24 C05416077

Familiarization of the components was extended to the assembly and disassembly of the system. Later in the day a short flight was planned for [redacted] and Yost but during the inflation one of the Raven personnel inadvertently stuck his hand in the inflation blower severely injuring his hand. His hand was injured to the extent that one finger was broken in four places and two fingers were cut to the bone and several stiches were required to sew the lacerations together. When this accident occurred the squib at the top of the balloon was initiated allowing the hot air to escape and deflate the balloon. This ended the days operation with the remainder of the day being utilized to prepare the equipment for the following day.

6 January - A flight was made this day with [redacted] and Yost as occupants. The flight lasted for a period of one hour and five minutes. The gondola with the two thirty gallon fuel tanks was used. The drift of the winds carried this flight eastward across the city of Albuquerque toward the mountains. Since there was a cloud cover over the mountains the occupants decided to descend prior to reaching the mountains. As a result the descent was on a street in the city. A momentary delay in firing the squib caused the gondola to be dragged across the street against the curb causing one of the straps on the gondola to snap and resulting in the loss of one of the fuel tanks. Although this gondola was extensively damaged neither of the occupants sustained any injury.

7 January - A flight was made this day from a new launch site. [redacted] and Yost were the occupants during this flight which travelled in a southerly direction and lasted for a period of one hour and forty-five minutes. No unusual events occurred during this flight with a normal landing being effected in an open field. At the completion of this flight time was taken to prepare all of the components for the next days test. This preparation included the refueling of the smaller tanks.

8 January - This days flight was made from the same launch point as the previous days flight. Messrs. [redacted] and Yost made this flight which lasted for a period of one hour and ten minutes. Once again no unusual events occurred with the landing being made in an open field atop a mesa. After recovery we all returned to the original launch site, reinflated the balloon and this time let [redacted] pilot the system while in a tethered condition. Later the undersigned was scheduled to perform the same; however, the winds increased in the late afternoon and this had to be aborted.

9 January - Once again a flight was launched from the same site; however, this particular flight was made under slightly different conditions. This flight was made with the white acrylic impregnated balloon and [redacted] and Yost served as occupants along with approximately two dozen bundles of paper. This paper represented leaflets and in all weighed 96 pounds. These leaflet were dropped from altitudes of 1000, 1500, and 3000 feet and a quick survey was made of the dispersal pattern during their descent to the ground. At the completion of this flight (2 hours and twelve minutes) the occupants touched down; however, the firing of the squib failed to open the top of the balloon and when the landing rope was released, the two occupants were spilled to the ground. With the release of this weight the balloon system rose and

Approved for Release: 2016/10/24 C05416077

Approved for Release: 2016/10/24 C05416077

flew for another twelve minutes before touching down and permitting recovery. Examination showed that although the squib had fired, improper leather, along with improper length of the leather held the top too tightly together causing the malfunction. It might be added that this was the initial flight for this particular balloon. During the inflation it was noted that the "HOO-HOO" was not proper on this balloon so it was sewed shut for this flight.

10 January - Due to high winds this day a flight could not be made. and Yost had been scheduled to try to make an endurance flight this particular day. Since this flight could not be made, the time was valuably utilized for a discussion of this transport system. A list of changes to be considered was made. These proposed changes are listed below:

(1) Alter the leather on the top tie off to more reliably assure opening.

(2) The needle valve has to be changed from stainless steel to prevent freeze up.

(3) Velcro will be placed on the "HOO-HOO" for the initial inflation.

(4) A second ~~rug~~ ring on the skirt will be tried to ease the initial inflation.

(5) Adjust the "HOO-HOO" on the acrylic balloon for more useful operation.

(6) Put hardware cloth around the fan to prevent future accidents such as the one that occured during these tests.

(7) Place handles on the ends of the fuel tanks.

(8) Put filter in the fuel lines.

(9) Replace the leather straps with nylon straps.

(10) Mount the portable burner on the blower for ease of operation and inflation.

(11) Modify the rope release for ease of use during the landing operation.

(12) Investigate possibility of a new and better safety pin.

(13) The skirt on the acrylic balloon must be rotated.

Approved for Release: 2016/10/24 C05416077

Approved for Release: 2016/10/24 C05416077

(14) Look into a means for securing the fuel hose clamp.

(15) Investigate the use of a noise deflection plate.

(16) Examine a means for preventing the condensation drippage onto the personnel during flight. It may be possible to feed this condensation back into the burner which would tend to increase the efficiency of this burner. (This drippage may appear as a minor nuisance, but in high humidity areas could prove to be quite impractical.)

(17) Calibrate the gauges on the tanks.

4. In addition to the above changes and after these changes are incorporated, the undersigned requested that Raven conduct the following tests:

(1) A flight endurance test

(2) A step out test

(3) A minimum personnel (2 man) launching test

(4) A noise reduction test. (During these current tests the noise of the blower was quite evident on the ground.)

5. Return to Headquarters was made on the afternoon of 10 January.

[redacted]

cc: [redacted]

Approved for Release: 2016/10/24 C05416077